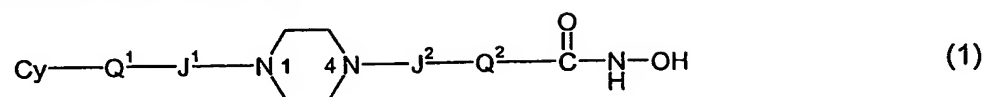


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CLAIMS

1. A compound of the formula:



wherein:

Cy is independently a cyclyl group;

Q<sup>1</sup> is independently a covalent bond or cyclyl leader group;

the piperazin-1,4-diyl group is optionally substituted;

J<sup>1</sup> is independently a covalent bond or -C(=O)-;

J<sup>2</sup> is independently -C(=O)- or -S(=O)<sub>2</sub>-;

Q<sup>2</sup> is independently an acid leader group;

wherein:

Cy is independently:

C<sub>3-20</sub>carbocyclyl,

C<sub>3-20</sub>heterocyclyl, or

C<sub>5-20</sub>aryl;

and is optionally substituted;

Q<sup>1</sup> is independently:

a covalent bond;

C<sub>1-7</sub>alkylene; or

C<sub>1-7</sub>alkylene-X-C<sub>1-7</sub>alkylene, -X-C<sub>1-7</sub>alkylene, or C<sub>1-7</sub>alkylene-X-,

wherein X is -O- or -S-;

and is optionally substituted;

Q<sup>2</sup> is independently:

C<sub>4-8</sub>alkylene;

and is optionally substituted;

and has a backbone length of at least 4 atoms;

or:

Q<sup>2</sup> is independently:

C<sub>5-20</sub>arylene;

C<sub>5-20</sub>arylene-C<sub>1-7</sub>alkylene;

C<sub>1-7</sub>alkylene-C<sub>5-20</sub>arylene; or,

C<sub>1-7</sub>alkylene-C<sub>5-20</sub>arylene-C<sub>1-7</sub>alkylene;

and is optionally substituted;

and has a backbone length of at least 4 atoms;

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or a pharmaceutically acceptable salt, solvate, amide, ester, ether, chemically protected form, or prodrug thereof.

\* \* \*

5

2. A compound according to claim 1, wherein the piperazin-1,4-diyl group is unsubstituted or substituted at one or more the 2-, 3-, 5-, and 6-positions with C<sub>1-4</sub>alkyl.

10

\* \* \*

3. A compound according to claim 1 or 2, wherein:  
J<sup>1</sup> is a covalent bond and J<sup>2</sup> is -C(=O)-; or:  
J<sup>1</sup> is -C(=O)- and J<sup>2</sup> is -C(=O)-; or:  
15 J<sup>1</sup> is a covalent bond and J<sup>2</sup> is -S(=O)<sub>2</sub>-.

4. A compound according to claim 1 or 2, wherein:  
J<sup>1</sup> is a covalent bond; and J<sup>2</sup> is -C(=O)-.

20

5. A compound according to claim 1 or 2, wherein:  
J<sup>1</sup> is -C(=O)-; and J<sup>2</sup> is -C(=O)-.

6. A compound according to claim 1 or 2, wherein:  
J<sup>1</sup> is a covalent bond; and J<sup>2</sup> is -S(=O)<sub>2</sub>-.

25

\* \* \*

7. A compound according to any one of claims 1 to 6, wherein Q<sup>1</sup> is independently:  
a covalent bond; or  
30 a cyclyl leader group;  
and is optionally substituted.

\* \* \*

35

8. A compound according to any one of claims 1 to 6, wherein Q<sup>1</sup> is independently a cyclyl leader group, and is optionally substituted.

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9. A compound according to any one of claims 1 to 6, wherein Q<sup>1</sup> is independently C<sub>1-7</sub>alkylene, and is optionally substituted.
- 5 10. A compound according to any one of claims 1 to 6, wherein:  
Q<sup>1</sup> is independently C<sub>1-7</sub>alkylene, and is optionally substituted;  
J<sup>1</sup> is independently a covalent bond;  
J<sup>2</sup> is independently -C(=O)-.
- 10 11. A compound according to any one of claims 1 to 6, wherein:  
Q<sup>1</sup> is independently C<sub>1-7</sub>alkylene, and is optionally substituted;  
J<sup>1</sup> is independently -C(=O)-;  
J<sup>2</sup> is independently -C(=O)-.
- 15 12. A compound according to any one of claims 1 to 6, wherein:  
Q<sup>1</sup> is independently C<sub>1-7</sub>alkylene, and is optionally substituted;  
J<sup>1</sup> is independently a covalent bond;  
J<sup>2</sup> is independently -S(=O)<sub>2</sub>-.
- 20 13. A compound according to any one of claims 1 to 6, wherein:  
Q<sup>1</sup> is independently C<sub>1-7</sub>alkylene, and is optionally substituted;  
J<sup>1</sup> is independently -C(=O)-;  
J<sup>2</sup> is independently -S(=O)<sub>2</sub>-.
- 25 14. A compound according to any one of claims 1 to 13, wherein Q<sup>1</sup> is independently C<sub>1-3</sub>alkylene, and is optionally substituted.
- \* \* \*
- 30 15. A compound according to any one of claims 1 to 6, wherein Q<sup>1</sup> is independently :  
C<sub>1-7</sub>alkylene-X-C<sub>1-7</sub>alkylene, -X-C<sub>1-7</sub>alkylene, or C<sub>1-7</sub>alkylene-X-;  
wherein X is -O- or -S-;  
and is optionally substituted.
- 35 16. A compound according to any one of claims 1 to 6, wherein Q<sup>1</sup> is independently :  
C<sub>1-3</sub>alkylene-X-C<sub>1-3</sub>alkylene, -X-C<sub>1-3</sub>alkylene, or C<sub>1-3</sub>alkylene-X-;

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wherein X is -O- or -S-;  
and is optionally substituted.

\* \* \*

5

17. A compound according to any one of claims 1 to 16, wherein Q<sup>1</sup>, if other than a covalent bond, is substituted.

10

18. A compound according to claim 17, wherein substituents on Q<sup>1</sup>, if present, are independently: halo, hydroxy, ether, C<sub>5-20</sub>aryl, acyl, amino, amido, acylamido, or oxo.

15

19. A compound according to claim 17, wherein substituents on Q<sup>1</sup>, if present, are independently: -F, -Cl, -Br, -I, -OH, -OMe, -OEt, -OPr, -Ph, -NH<sub>2</sub>, -CONH<sub>2</sub>, or =O.

20. A compound according to any one of claims 1 to 16, wherein Q<sup>1</sup>, if other than a covalent bond, is unsubstituted.

\* \* \*

20

21. A compound according to any one of claims 1 to 6, wherein Q<sup>1</sup> is independently a covalent bond.

25

22. A compound according to any one of claims 1 to 6, wherein:  
Q<sup>1</sup> is independently a covalent bond;  
J<sup>1</sup> is independently a covalent bond;  
J<sup>2</sup> is independently -C(=O)-.

30

23. A compound according to any one of claims 1 to 6, wherein:  
Q<sup>1</sup> is independently a covalent bond;  
J<sup>1</sup> is independently -C(=O)-;  
J<sup>2</sup> is independently -C(=O)-.

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24. A compound according to any one of claims 1 to 6, wherein:

Q<sup>1</sup> is independently a covalent bond;

J<sup>1</sup> is independently a covalent bond;

J<sup>2</sup> is independently -S(=O)<sub>2</sub>-.

5

25. A compound according to any one of claims 1 to 6, wherein:

Q<sup>1</sup> is independently a covalent bond;

J<sup>1</sup> is independently -C(=O)-;

J<sup>2</sup> is independently -S(=O)<sub>2</sub>-.

FIG. 30A

10

\* \* \*

26. A compound according to any one of claims 1 to 25, wherein Q<sup>2</sup> is independently:

C<sub>4-8</sub>alkylene;

and is optionally substituted;

and has a backbone length of at least 4 atoms.

15

27. A compound according to any one of claims 1 to 25, wherein Q<sup>2</sup> is independently a saturated C<sub>4-8</sub>alkylene group.

20

28. A compound according to any one of claims 1 to 25, wherein Q<sup>2</sup> is independently a partially unsaturated C<sub>4-8</sub>alkylene group.

29. A compound according to any one of claims 1 to 25, wherein Q<sup>2</sup> is independently an aliphatic C<sub>4-8</sub>alkylene group

25

30. A compound according to any one of claims 1 to 25, wherein Q<sup>2</sup> is independently a linear C<sub>4-8</sub>alkylene group.

30

31. A compound according to any one of claims 1 to 25, wherein Q<sup>2</sup> is independently a saturated aliphatic C<sub>4-8</sub>alkylene group.

32. A compound according to any one of claims 1 to 25, wherein Q<sup>2</sup> is independently a saturated linear C<sub>4-8</sub>alkylene group.

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33. A compound according to any one of claims 1 to 25, wherein Q<sup>2</sup> is independently a partially unsaturated aliphatic C<sub>4-8</sub>alkylene group.

34. A compound according to any one of claims 1 to 25, wherein Q<sup>2</sup> is independently a partially unsaturated linear C<sub>4-8</sub>alkylene group.

35. A compound according to any one of claims 1 to 25, wherein Q<sup>2</sup> is independently selected from:

-(CH<sub>2</sub>)<sub>5</sub>-; -(CH<sub>2</sub>)<sub>6</sub>-; -(CH<sub>2</sub>)<sub>7</sub>-; -(CH<sub>2</sub>)<sub>8</sub>-;

-CH(CH<sub>3</sub>)CH<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>-;

-CH<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>CH(CH<sub>3</sub>)-;

-CH<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>CH=CH-; and,

-CH<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>CH=CH-.

36. A compound according to any one of claims 1 to 25, wherein Q<sup>2</sup> is independently selected from:

-(CH<sub>2</sub>)<sub>5</sub>-, -(CH<sub>2</sub>)<sub>6</sub>-, -(CH<sub>2</sub>)<sub>7</sub>-, and -(CH<sub>2</sub>)<sub>8</sub>-.

\* \* \*

37. A compound according to any one of claims 1 to 25, wherein Q<sup>2</sup>, is independently:

C<sub>5-20</sub>arylene;

C<sub>5-20</sub>arylene-C<sub>1-7</sub>alkylene;

C<sub>1-7</sub>alkylene-C<sub>5-20</sub>arylene;

C<sub>1-7</sub>alkylene-C<sub>5-20</sub>arylene-C<sub>1-7</sub>alkylene; or,

and is optionally substituted;

and has a backbone length of at least 4 atoms.

38. A compound according to any one of claims 1 to 25, wherein Q<sup>2</sup>, is independently:

C<sub>5-20</sub>arylene;

and is optionally substituted;

and has a backbone length of at least 4 atoms.

39. A compound according to any one of claims 1 to 25, wherein Q<sup>2</sup>, is independently:

C<sub>5-20</sub>arylene-C<sub>1-7</sub>alkylene;

C<sub>1-7</sub>alkylene-C<sub>5-20</sub>arylene;

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C<sub>1-7</sub>alkylene-C<sub>5-20</sub>arylene-C<sub>1-7</sub>alkylene; or,  
and is optionally substituted;  
and has a backbone length of at least 4 atoms.

5      40.    A compound according to any one of claims 1 to 25, wherein Q<sup>2</sup>, is independently:  
          C<sub>5-6</sub>arylene-C<sub>1-7</sub>alkylene;  
          C<sub>1-7</sub>alkylene-C<sub>5-6</sub>arylene; or,  
          C<sub>1-7</sub>alkylene-C<sub>5-6</sub>arylene-C<sub>1-7</sub>alkylene;  
          and is optionally substituted;  
10           and has a backbone length of at least 4 atoms.

          41.    A compound according to any one of claims 1 to 25, wherein Q<sup>2</sup>, is independently:  
          phenylene-C<sub>1-7</sub>alkylene;  
          C<sub>1-7</sub>alkylene-phenylene; or,  
15           C<sub>1-7</sub>alkylene-phenylene-C<sub>1-7</sub>alkylene;  
          and is optionally substituted;  
          and has a backbone length of at least 4 atoms.

          42.    A compound according to any one of claims 1 to 25, wherein Q<sup>2</sup>, is independently:  
20           methylene-phenylene;  
          ethylene-phenylene;  
          phenylene-methylene;  
          phenylene-ethylene;  
          phenylene-ethenylene;  
25           methylene-phenylene-methylene;  
          methylene-phenylene-ethylene;  
          methylene-phenylene-ethenylene;  
          ethylene-phenylene-methylene;  
          ethylene-phenylene-ethylene;  
30           ethylene-phenylene-ethenylene;  
          and is optionally substituted;  
          and has a backbone length of at least 4 atoms.

\* \* \*

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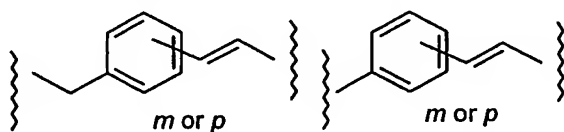
43. A compound according to claim 41 or 42, wherein the phenylene linkage is meta or para.

44. A compound according to claim 41 or 42, wherein the phenylene linkage is meta.

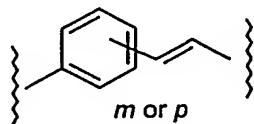
45. A compound according to claim 41 or 42, wherein the phenylene linkage is para.

\* \* \*

46. A compound according to any one of claims 1 to 25, wherein  $Q^2$ , is independently:



47. A compound according to any one of claims 1 to 25, wherein  $Q^2$ , is independently:



\* \* \*

48. A compound according to any one of claims 1 to 26 and 37 to 41, wherein  $Q^2$  is substituted.

49. A compound according to claim 48, wherein substituents on  $Q^2$  are independently:

- (1) ester;
- (2) amido;
- (3) acyl;
- (4) halo;
- (5) hydroxy;
- (6) ether;
- (7)  $C_{1-7}$ alkyl, including substituted  $C_{1-7}$ alkyl;
- (8)  $C_{5-20}$ aryl, including substituted  $C_{5-20}$ aryl;
- (9) sulfonyl;
- (10) sulfonamido;
- (11) amino;



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(12) morpholino;

(13) nitro;

(14) cyano.

5 50. A compound according to claim 48, wherein substituents on Q<sup>2</sup> are independently:

(1) -C(=O)OMe, -C(=O)OEt, -C(=O)O(Pr), -C(=O)O(iPr), -C(=O)O(nBu),

-C(=O)O(sBu), -C(=O)O(iBu), -C(=O)O(tBu), -C(=O)O(nPe);

-C(=O)OCH<sub>2</sub>CH<sub>2</sub>OH, -C(=O)OCH<sub>2</sub>CH<sub>2</sub>OMe, -C(=O)OCH<sub>2</sub>CH<sub>2</sub>OEt;

(2) -(C=O)NH<sub>2</sub>, -(C=O)NMe<sub>2</sub>, -(C=O)NEt<sub>2</sub>, -(C=O)N(iPr)<sub>2</sub>, -(C=O)N(CH<sub>2</sub>CH<sub>2</sub>OH)<sub>2</sub>;

10 (3) -(C=O)Me, -(C=O)Et, -(C=O)-cHex, -(C=O)Ph;

(4) -F, -Cl, -Br, -I;

(5) -OH;

(6) -OMe, -OEt, -O(iPr), -O(tBu), -OPh;

-OCF<sub>3</sub>, -OCH<sub>2</sub>CF<sub>3</sub>;

15 -OCH<sub>2</sub>CH<sub>2</sub>OH, -OCH<sub>2</sub>CH<sub>2</sub>OMe, -OCH<sub>2</sub>CH<sub>2</sub>OEt;

-OCH<sub>2</sub>CH<sub>2</sub>NH<sub>2</sub>, -OCH<sub>2</sub>CH<sub>2</sub>NMe<sub>2</sub>, -OCH<sub>2</sub>CH<sub>2</sub>N(iPr)<sub>2</sub>;

-OPh, -OPh-Me, -OPh-OH, -OPh-OMe, -OPh-F, -OPh-Cl, -OPh-Br, -OPh-I;

(7) -Me, -Et, -nPr, -iPr, -nBu, -iBu, -sBu, -tBu, -nPe;

-CF<sub>3</sub>, -CH<sub>2</sub>CF<sub>3</sub>;

20 -CH<sub>2</sub>CH<sub>2</sub>OH, -CH<sub>2</sub>CH<sub>2</sub>OMe, -CH<sub>2</sub>CH<sub>2</sub>OEt;

-CH<sub>2</sub>CH<sub>2</sub>NH<sub>2</sub>, -CH<sub>2</sub>CH<sub>2</sub>NMe<sub>2</sub>, -CH<sub>2</sub>CH<sub>2</sub>N(iPr)<sub>2</sub>;

-CH<sub>2</sub>-Ph;

(8) -Ph, -Ph-Me, -Ph-OH, -Ph-OMe, -Ph-F, -Ph-Cl, -Ph-Br, -Ph-I;

(9) -SO<sub>2</sub>Me, -SO<sub>2</sub>Et, -SO<sub>2</sub>Ph;

25 (10) -SO<sub>2</sub>NH<sub>2</sub>, -SO<sub>2</sub>NMe<sub>2</sub>, -SO<sub>2</sub>NEt<sub>2</sub>;

(11) -NMe<sub>2</sub>, -NEt<sub>2</sub>;

(12) morpholino;

(13) -NO<sub>2</sub>;

(14) -CN.

30

51. A compound according to any one of claims 1 to 47, wherein Q<sup>2</sup> is unsubstituted.

\* \* \*

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52. A compound according to any one of claims 1 to 51, wherein Q<sup>2</sup> has a backbone of at least 5 atoms.

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53. A compound according to any one of claims 1 to 51, wherein Q<sup>2</sup> has a backbone of at least 6 atoms.

5

\* \* \*

54. A compound according to any one of claims 1 to 51, wherein Cy is independently C<sub>3-20</sub>carbocyclyl; and is optionally substituted.

10

55. A compound according to any one of claims 1 to 51, wherein Cy is independently C<sub>3-20</sub>carbocyclyl derived from one of the following: cyclopropane, cyclobutane, cyclopentane, cyclohexane, cyclopentene, cyclohexene, norbornane, adamantane, cyclopentanone, and cyclohexanone; and is optionally substituted.

15

56. A compound according to any one of claims 1 to 51, wherein Cy is independently C<sub>3-20</sub>heterocyclyl; and is optionally substituted.

20

57. A compound according to any one of claims 1 to 51, wherein Cy is independently C<sub>3-20</sub>heterocyclyl derived from one of the following: piperidine, azepine, tetrahydropyran, morpholine, azetidine, piperazine, imidazoline, piperazinedione, and oxazolinone; and is optionally substituted.

25

58. A compound according to any one of claims 1 to 51, wherein Cy is independently C<sub>5-20</sub>aryl; and is optionally substituted.

59. A compound according to any one of claims 1 to 51, wherein Cy is independently C<sub>5-20</sub>carboaryl or C<sub>5-20</sub>heteroaryl; and is optionally substituted.

30

60. A compound according to any one of claims 1 to 51, wherein Cy is independently C<sub>5-20</sub>aryl derived from one of the following: benzene, pyridine, furan, indole, pyrrole, imidazole, pyrimidine, pyrazine, pyridizine, naphthalene, quinoline, indole, benzimidazole, benzothiofuran, fluorene, acridine, and carbazole; and is optionally substituted.

61. A compound according to any one of claims 1 to 51, wherein Cy is independently an optionally substituted phenyl group.
- 5 62. A compound according to any one of claims 1 to 51, wherein Cy is optionally substituted with one or more substituents as defined in claim 49.
63. A compound according to any one of claims 1 to 51, wherein Cy is optionally substituted with one or more substituents as defined in claim 50.
- 10 64. A compound according to claim 1, selected from the following compounds, and pharmaceutically acceptable salts, solvates, amides, esters, ethers, chemically protected forms, and prodrugs thereof:

1	PX117402	28	PX118870	55	PX118911
2	PX117403	29	PX118871	56	PX118913
3	PX117404	30	PX118872	57	PX118914
4	PX117764	31	PX118873	58	PX118918
5	PX117768	32	PX118874	59	PX118927
6	PX118490	33	PX118875	60	PX118928
7	PX118491	34	PX118876	61	PX118929
8	PX118791	35	PX118877	62	PX118930
9	PX118792	36	PX118878	63	PX118931
10	PX118793	37	PX118882	64	PX118932
11	PX118794	38	PX118891	65	PX118933
12	PX118807	39	PX118892	66	PX118934
13	PX118810	40	PX118893	67	PX118935
14	PX118811	41	PX118894	68	PX118937
15	PX118812	42	PX118898	69	PX118951
16	PX118830	43	PX118899	70	PX118965
17	PX118831	44	PX118900	71	PX118967
18	PX118832	45	PX118901	72	PX118968
19	PX118844	46	PX118902	73	PX118969
20	PX118845	47	PX118903	74	PX118970
21	PX118846	48	PX118904	75	PX118971
22	PX118847	49	PX118905	76	PX118972
23	PX118848	50	PX118906	77	PX118978
24	PX118849	51	PX118907	78	PX118989
25	PX118850	52	PX118908	79	PX118990
26	PX118859	53	PX118909	80	PX118991
27	PX118860	54	PX118910	81	PX118994

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\* \* \*

- 5           65.    A composition comprising a compound according to any one of claims 1 to 64 and a pharmaceutically acceptable carrier.
66.    A compound according to any one of claims 1 to 64 for use in a method of treatment of the human or animal body by therapy.
- 10       67.    A compound according to any one of claims 1 to 64 for use in a method of treatment of a condition mediated by HDAC of the human or animal body by therapy.
68.    A compound according to any one of claims 1 to 64 for use in a method of treatment of a proliferative condition of the human or animal body by therapy.
- 15       69.    A compound according to any one of claims 1 to 64 for use in a method of treatment of cancer of the human or animal body by therapy.
70.    A compound according to any one of claims 1 to 64 for use in a method of treatment of psoriasis of the human or animal body by therapy.
71.    Use of a compound according to any one of claims 1 to 64 for the manufacture of a medicament for use in the treatment of a condition mediated by HDAC.
- 25       72.    Use of a compound according to any one of claims 1 to 64 for the manufacture of a medicament for use in the treatment of a proliferative condition.
73.    Use of a compound according to any one of claims 1 to 64 for the manufacture of a medicament for use in the treatment of cancer.
- 30       74.    Use of a compound according to any one of claims 1 to 64 for the manufacture of a medicament for use in the treatment of psoriasis.
75.    A method inhibiting HDAC in a cell comprising said cell with an effective amount of a compound according to any one of claims 1 to 64.
- 35

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76. A method for the treatment of a condition mediated by HDAC comprising administering to a subject suffering from a condition mediated by HDAC a therapeutically-effective amount of a compound according to any one of claims 1 to 64.
- 5
77. A method for the treatment of a proliferative condition comprising administering to a subject suffering from a proliferative condition a therapeutically-effective amount of a compound according to any one of claims 1 to 64.
- 10
78. A method for the treatment of cancer comprising administering to a subject suffering from cancer a therapeutically-effective amount of a compound according to any one of claims 1 to 64.
- 15
79. A method for the treatment of psoriasis comprising administering to a subject suffering from psoriasis a therapeutically-effective amount of a compound according to any one of claims 1 to 64.

\* \* \*